DOCUMENT RESUME

ED 290 650 SO 018 435

AUTHOR Barbee, William C., Jr.
TITLE An Inquiry into the Relationship between Projected Changes in Earnings per Share and Subsequent Security Performance.
PUB DATE Jul 86
NOTE 10p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Correlation; Data Analysis; Data Interpretation; Economic Change; Economic Research; Economics; *Income; Inquiry; Investment; Prediction; Primary Sources; Research Reports; Social Studies
IDENTIFIERS *Estimation; *Securities Industry

ABSTRACT

The purpose of this study was to examine the variable of estimated earnings in order to determine how forecasts might be utilized to develop a securities portfolio strategy. The hypothesis stated that there is an inverse relationship between projected change in earnings per share and security performance. Ninety-one New York Stock Exchange corporations listed in the Standard and Poor's 100 Index during 1984 were used to test this research hypothesis. All of the rank correlation coefficients resulted in statistically negative values, and the results were sufficient for rejection of the null hypothesis that there is no relationship between the variables. The study concluded that positive earnings' projections may be a misleading criterion for securities' selection. Both the theoretical analysis and empirical evidence of this research project support the concept that portfolio performance would be enhanced if securities were selected from among those with unfavorable earnings' projections. A table is included. (JHP)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED290650

AN INQUIRY INTO THE RELATIONSHIP BETWEEN PROJECTED CHANGES IN EARNINGS PER SHARE AND SUBSEQUENT SECURITY PERFORMANCE

William C. Barbee, Jr.
July, 1986

SO018435

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

William C. Barbee, Jr.

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Background, Literature Review, and Purpose of Research

Substantial empirical evidence has shown that the earnings growth rate is a significant determinant of security performance.[1] And the study by Niederhoffer and Regan indicated that the best-performing securities reported earnings greater than analysts' estimates while the worst-performing securities reported earnings below the analysts' estimates.[2]

The research concerning the importance of earnings would be useful to investors in forecasting the security performance if, in fact, future earnings could be estimated with a reasonable degree of accuracy. However, many studies evaluating the reliability of analysts' earnings projections have shown them to be characterized by substantial forecasting errors.[3] In fact, simple extrapolation of current trends would have resulted in earnings forecasts that are as good as or better than the estimates of institutional analysts.[4]

Since future earnings are unknown and estimated earnings are not a valid indicator of future earnings, the established relationship between reported earnings and security performance is of limited value in either selecting securities or forecasting security performance. The purpose of this study is to focus on a variable that is readily available to an investor -- estimated earnings -- and to suggest how these forecasts can be used to develop a portfolio strategy. The research hypothesis that was developed and tested for this report was that there is an inverse relationship between the projected change in earnings per share and security performance.

Theoretical Basis of Research Hypothesis

The research hypothesis of an inverse relationship between the estimated change in earnings and security performance is contrary to the apparently logical conclusion that securities with more favorable earnings expectations should have

better performance than securities with less favorable earnings forecasts. However, if examined closely, this hypothesis is reasonable. For securities with a favorable earnings forecast (the terms favorable and unfavorable earnings forecast will be defined more precisely in the section dealing with research methodology) one can expect one of two possibilities: (1) the favorable earnings outcome will occur in which case the stock will not rise significantly since the stock's price will have already reflected the possibility of favorable earnings because of the widespread availability of the forecast; or (B) the favorable earnings will not occur causing a significant drop in the price of the stock as investors become disenchanted with the company's prospects due to reported earnings being below expectations. (For example, in July, 1986, IBM reported earnings below analysts' projections and subsequently the price of its stock dropped over 17 points within two weeks.) The combined result of these two possibilities is that securities with favorable earnings forecasts will, on the average, have below average performance.

Similarly, it can be hypothesized that securities with unfavorable earnings forecasts will tend to have above average performance. For these types of securities one can expect that, on the average, the report of expected unfavorable earnings will have less of an effect on a stock's price than the unanticipated report of more favorable earnings.

If the research hypothesis is valid, investors planning to purchase securities will generally do better to select from among those securities with unfavorable earnings forecasts rather than from among securities with more favorable earnings forecasts. The research methodology used to test the hypothesis is detailed in the next section.

Research Methodology

The research hypothesis was tested by computing both the Kendall and the Spearman rank correlation coefficients for each of two specifications of the relationship between security performance and the estimated change in earnings per share. For both specifications, security performance, referred to in this study as SP, was calculated as the percent change in a stock's price between the last trading date in 1983 and the last trading date of 1984, with the price data being adjusted for stock splits and stock dividends. However, there was a difference between the two equations in the measure of how favorable (and unfavorable) a stock's earnings forecast was.

For the first computation of the two rank correlation coefficients the favorableness of a corporation's earnings forecast was measured as the consensus average of analysts' estimated percent change in per share earnings between 1984 and 1983. This average of the security analysts' forecasts, referred to in this study as PCE, was published by William O'Neil and Company, Inc. in the December 30, 1983 issue of New York Stock Exchange Daily Graphs. It was calculated as the arithmetic average of the analysts' forecasts.

The second method of measuring how favorable (and unfavorable) an earnings projection was used the same source of data. For this second specification, the consensus forecast of the change in earnings per share for 1984 was expressed as the percent of a stock's price on the last trading date of 1983. For example, if earnings per share for 1984 were estimated to be $1.50 higher than the EPS for 1983 and the stock's last price for 1983 was $10.00 per share, the value for this variable, which is referred to in this study as the projected relative change in earnings, or PRCE, would be 15 percent. This alternative measure of forecasted earnings change was developed as a method of relating the magnitude of a stock's

estimated change in earnings per share to its per share price. This alternative measure is based on the concept that a projected change in EPS of $1.50 for a $10.00 stock may be more significant than the same projected change in EPS for a $50.00 stock.

In the first specification the rank correlation coefficients were used to determine the nature and significance of the association between SP and PCE, while the second specification tested the association between SP and PRCE. A statistically significant negative value for the rank correlation coefficients would confirm the research hypothesis of an inverse relationship between projected changes in earnings per share for a given year and a stock's performance during that year.

The sample of companies used for testing the research hypothesis were the New York Stock Exchange corporations that were in the Standard and Poor's 100 Index during 1984. The sample included Occidental Petroleum since it replaced Superior Oil in 1984. Superior Oil and Esmark were excluded since they were acquired, respectively, by Mobil Oil and Beatrice Companies in 1984. Companies that lost money in 1983 were excluded because of the impossibility of calculating the percent change in EPS between 1983 and 1984. After these adjustments there were 91 companies for which the research hypothesis was tested.

Statistical Results

All of the rank correlation coefficients have statistically significant negative values. These results are consistent with the research hypothesis that there is an inverse relationship between projected changes in earnings per share and security performance, and are sufficient for rejection of the null hypothesis that there is no relationship between these variables.

The statistical results are summarized in Table 1. In the test of the relationship between security performance (SP) and the projected percent change in earnings

TABLE 1

SUMMARY OF STATISTICAL RESULTS

Test of Relationship Between Security Performance (SP) and the Projected Percent Change in Earnings Per Share (PCE)

Spearman Rank Correlation Coefficient	=	- .3278
Level of Statistical Significance	=	.002
Kendall Rank Correlation Coefficient	=	- .2215
Level of Statistical Significance	=	.002

Test of Relationship Between Security Performance (SP) and Projected Relative Change in Earnings (PRCE)

Spearman Rank Correlation Coefficient	=	- .2109
Level of Statistical Significance	=	.045
Kendall Rank Correlation Coefficient	=	- .1417
Level of Statistical Significance	=	.047

per share (PCE), the correlation coefficients were negative and, using a two-tailed test, statistically significant at the .002 level.

In the test of the relationship between security performance (SP) and the projected relative change in earnings (PRCE), the negative values of the correlation coefficients were statistically significant at the .05 level. These results indicate that even if projected changes in earnings per share are measured relative to a security's price, there is a statistically significant inverse relationship between earnings projections and subsequent security performance.

Conclusions

The primary conclusion of this report is that earnings projections may be a misleading criterion for the selection of securities. In fact, both the theoretical analysis and empirical evidence of this research support the idea that portfolio performance would be enhanced if the securities included were selected from among those with unfavorable earnings projections.

FOOTNOTES

[1]M. Kisor and V. Messner, "The Filter Approach and Earnings Forecasts - Part One," unpublished manuscript cited in J. Lorie and M. Hamilton, The Stock Market: Theory and Evidence (Homewood, Ill.: Richard D. Irwin, Inc., 1973), p. 157; Lorie and Hamilton, pp. 157-167; see also R. Brealey, An Introduction to Risk and Return from Common Stocks (Cambridge: MIT Press, 1969) pp. 81-87; H. Latane and D. Tuttle, "An Analysis of Common Stock Price Ratios," Southern Economic Journal, January, 1967, pp. 343-354; R. Levy and S. Kripotos, "Earnings Growth, P/E's and Relative Price Strength," Financial Analysts Journal, November-December, 1969, pp. 60, 62 and 64-67; B. Malkiel and J. Cragg, "Expectations and the Structure of Share Prices," American Economic Review, September, 1970, pp. 601-617; R. Ball and P. Brown, "An Empirical Evaluation of Accounting Incomes," Journal of Accounting Research, Autumn, 1968, pp. 159-178; O. Joy, R. Litzenberger and R. McEnally, "The Adjustment of Stock Prices to Announcements of Unanticipated Changes in Quarterly Earnings," Journal of Accounting Research, Autumn, 1977, pp. 207-225; V. Niederhoffer and P. Regan, "Earnings Changes, Analysts' Forecasts and Stock Prices," Financial Analysts Journal, May-June, 1972, pp. 65-71; and H. Latane and D. Tuttle, "Framework for Forming Probability Beliefs," Financial Analysts Journal, July-August, 1968, pp. 51-61.

[2]V. Niederhoffer and P. Regan, "Earnings Changes, Analysts' Forecasts and Stock Prices," Financial Analysts Journal, May-June, 1972, pp. 65-71.

[3]R.M. Barefield and E.E. Cominsky, "The Accuracy of Analysts' Forecasts of Earnings Per Share," Journal of Business Research, July, 1975, pp. 241-252; Bart A. Basi, Kenneth J. Carey, and Richard D. Twark, "Comparison of the Accuracy of Corporate and Security Analysts' Forecasts of Earnings," Accounting Review 51 (1976), pp. 244-254; J.Buckman, The Reliability of Earnings Forecasts (prepared for the Trust Investment Committee of the Continental Illinois Bank), Chicago, September, 1963; Ronald M. Copeland and Robert J. Marioni, "Executives' Forecasts of Earnings Per Share Versus Forecasts of Naive Models," Journal of Business, October, 1972, pp. 497-512; J. Cragg and B. Malkiel, "The Consensus and Accuracy of Some Predictions of the Growth of Corporate Earnings," Journal of Finance, March, 1968, pp. 67-84; E. Elton and M. Gruber, "Earnings Estimates and the Accuracy of Expectational Data," Management Science, April, 1972, B409-B424; David Green, Jr., and Joel Segall, "The Predictive Power of First Quarter Earnings Reports," Journal of Business, January, 1967, pp. 44-55; T. Johnson and T. Schmitt, "Effectiveness of Earnings Per Share Forecasts," Financial Management, Summer, 1974, pp. 64-74; C. L. McDonald, "An Empirical Examination of the Reliability of Published Predictions of Future Earnings," Accounting Review 48(1973), p. 502; R. Malcolm Richards, "Analysts' Performance and the Accuracy of Corporate Earnings Forecasts," Journal of Business, July, 1976, pp. 350-357; R. Malcolm Richards, James J. Benjamin, and Robert W. Strawser, "An Examination of the Accuracy of Earnings Forecasts," Financial Management, Fall, 1977; R. Malcolm Richards and Donald R. Frazer, "Further Evidence on the Accuracy of Analysts' Earnings Forecasts: A Comparison Among Analysts," Journal of Economics and Business, Spring-Summer, 1977, pp. 193-197; and Samuel S. Stewart, Jr., "Research Report on Corporate Forecasts," Financial Analysts Journal, January-February, 1973, pp. 77-85.

[4]J. Cragg and B. Malkiel, "The Consensus and Accuracy of Some Predictions of the Growth of Corporate Earnings," Journal of Finance, March, 1968, pp. 67-84; and E. Elton and M. Gruber, "Earnings Estimates and the Accuracy of Expectational Data," Management Science, April, 1972, pp. B409-B424.